



HHS Public Access

Author manuscript

J Child Fam Stud. Author manuscript; available in PMC 2017 February 01.

Published in final edited form as:

J Child Fam Stud. 2016 February ; 25(2): 661–668. doi:10.1007/s10826-015-0246-z.

An Adverse Family Environment During Adolescence Predicts Marijuana Use and Antisocial Personality Disorder in Adulthood

Jung Yeon Lee¹, Judith S. Brook¹, Stephen J. Finch², and David W. Brook¹

Judith S. Brook: Judith.brook@nyumc.org

¹Department of Psychiatry, New York University School of Medicine, 215 Lexington Ave., 15th Fl., New York, NY 10016, USA

²Department of Applied Mathematics and Statistics, Stony Brook University, Stony Brook, NY 11794, USA

Abstract

Adult maladaptive behaviors including antisocial personality disorder (ASPD) and marijuana use are major public health concerns. At the present time, there is a dearth of research showing the interrelationships among the possible predictors of adult maladaptive behaviors (i.e., ASPD and marijuana use). Therefore, the current study examines the pathways from adverse family environments in late adolescence to these maladaptive behaviors in adulthood. There were 674 participants (52 % African Americans, 48 % Puerto Ricans). Sixty percent of the sample was female. Structural equation modeling in the current study included 4 waves of data collection (mean ages 19, 24, 29, and 36). An adverse family environment in late adolescence was related to greater externalizing personality in late adolescence, which in turn, was related to greater marijuana use in emerging adulthood. This in turn was positively associated with partner marijuana use in young adulthood, which in turn, was ultimately related to maladaptive behaviors in adulthood. An adverse family environment in late adolescence was also related to greater marijuana use in emerging adulthood, which in turn, was associated with an adverse relationship with one's partner in young adulthood. Such a negative partner relationship was related to maladaptive behaviors in adulthood. The findings suggest that family-focused interventions (Kumpfer and Alvarado in *Am Psychol* 58(6–7): 457–465, 2003) for dysfunctional families may be most helpful when they include the entire family.

Keywords

Adverse family environment; Maladaptive behaviors in adulthood; Longitudinal study; Structural equation modeling

Correspondence to: Judith S. Brook, Judith.brook@nyumc.org.

Conflict of interest

None of the authors have any conflict of interest.

Introduction

Adult maladaptive behaviors including antisocial personality disorder (ASPD) and marijuana use are major public health concerns (Johnston et al. 2014; Kennedy et al. 2014; Volkow et al. 2014; Yang et al. 2013). ASPD is characterized by chronic antisocial behavior that is not due to severe mental retardation, schizophrenia, or manic episodes (VandenBos 2007). Recently, a review paper reported several adverse consequences of ASPD such as emotion processing deficits, changes in brain structure and function, alterations in cortisol secretion, and atypical personality traits (Fairchild et al. 2013). In addition, although the prevalence of ASPD in the general population is about 3–4 % (Compton et al. 2005; Eaton et al. 2012; Samuels et al. 2002), it was as high as 36 % among the patients recruited from an inpatient substance use treatment facility in Washington, D.C. (Chen et al. 2011).

Marijuana use is common but illicit and can be considered another major component of maladaptive behaviors. A recent review study reported that marijuana use has a number of adverse health consequences such as addiction, adverse effects on brain development, and mental illness (Volkow et al. 2014). Furthermore, adult problem behaviors have extremely high social costs and lead to overburdened mental health and justice systems in the United States (Greenberg and Lippold 2013). At the present time, however, there is a dearth of research showing the interrelationships among the possible predictors of adult maladaptive behaviors (i.e., ASPD and marijuana use) based on individual and family factors. An understanding of the risk and protective factors at multiple interpersonal levels, including individual and family levels, is particularly important for the development of intervention programs for preventing maladaptive behaviors in adulthood. Therefore, the current study examines the pathways from family environments and externalizing behaviors in late adolescence, marijuana use in emerging adulthood, and the relationships with one's partner and the partner's marijuana use in young adulthood to maladaptive behaviors (i.e., ASPD and marijuana use) in adulthood.

A major precursor of ASPD and marijuana use is family criminality. About half of the inmates in federal or state prisons are parents (Eddy and Reid 2002; Geller et al. 2009). Parental incarceration has been shown in several studies to have an adverse effect on children. Research on parental incarceration and childhood well-being has focused on the intergenerational transmission of criminality; that is, having an antisocial parent or parents was one of the strongest predictors of violent or serious delinquency in adolescence and young adulthood (Eddy and Reid 2002; Murray and Farrington 2008). In a related vein, Brook and colleagues found that parents' antisocial behaviors such as theft and vandalism and/or marijuana use were correlated with their children's maladaptive behaviors including delinquency and aggression (Brook et al. 2012).

In contrast, family religiosity, a major protective factor representing the family environment, might also be transmitted from parents to their children and was related to a reduction in the children's delinquent behaviors, particularly in early adolescence (Chamrathirong et al. 2013). Furthermore, results from research based on a sample of 342 heterosexual married couples indicated that religiosity plays an important role in the quality of the marriage

indirectly as it appears to manifest itself in religious communication between partners, which in turn was directly linked to marital satisfaction (David and Stafford 2013).

A number of longitudinal studies have found a temporal relationship between earlier delinquent behavior and later marijuana use in adolescence as well as in adulthood (Becker et al. 2012; Brook et al. 2011; Reboussin et al. 2015). For example, Reboussin et al. (2015) found that youths who engaged in externalizing behavior were significantly more likely to transition from no marijuana involvement to the use of marijuana using a community sample of 458 low-income, urban-dwelling African Americans. In contrast, religiousness seemed to have a protective effect on marijuana use. Indeed, several longitudinal studies found a negative association between earlier religiosity and later marijuana use during adolescence and young adulthood (Adamczyk 2012; Hoffmann 2014). Therefore, lesser religiosity could be considered as a risk factor for marijuana use.

According to Social Learning Theory (Bandura 1977) and Social Control Theory (Hirschi 2002), young adults who socialized with friends or had a partner involved in drug-related activities were more likely to use drugs. In a 10 year longitudinal study, self marijuana use was associated with partner marijuana use in early adulthood among men (Washburn et al. 2014). In another longitudinal study covering 15 years, the chronic marijuana use trajectory group during adolescence and during adulthood was highly associated with partners' marijuana use and poor relationships with their partner (e.g., frequent arguments) in adulthood (Brook et al. 2011).

In a cross-sectional study, adults with ASPD reported more strained family relationships than those without ASPD (Mueser et al. 2012). In addition, data from the National Longitudinal Study of Adolescent Health showed that a respondent having a stronger romantic relationship with a partner reported less marijuana use in the future (Gudonis-Miller et al. 2012). Another longitudinal study found that more frequent arguments with one's partner were associated with an increased likelihood of cannabis use disorders (Brook et al. 2011). A review paper, exploring how problem behaviors (i.e., antisocial behavior and substance use) are influenced by romantic relationships, suggests that positive relationship qualities provide an opportunity to change trajectories of problem behaviors (Rhule-Louie and McMahon 2007). These investigators also suggest that romantic relationships may play a protective role, that is, bonds to romantic partners may exert a strong socializing influence and effectively deter problem behaviors.

Conversely, a participant's own maladaptive behaviors could influence a partner's maladaptive behavior (Liebregts et al. 2013). For example, one's frequent drug use may be associated with more frequent maladaptive behavior (e.g., ASPD, marijuana use) by the partner in an attempt to share experiences or imitate the first partner's behavior. However, the longitudinal relationship between one partner's marijuana use and the other's ASPD has not yet been investigated. In the current study, based on previous research, we added the pathway from earlier partner marijuana use to later ASPD.

Our study is unique in three ways. First, we assess the predictors of maladaptive behaviors among relatively understudied minority groups (i.e., African Americans and Puerto Ricans)

living in an urban area. Second, in contrast to prior research using cross-sectional samples of participants, we followed a sample longitudinally from late adolescence to adulthood. Third, a number of significant dimensions at different developmental stages (i.e., family environment and externalizing personality attributes in late adolescence, self marijuana use in emerging adulthood, partner's marijuana use and relationships with a partner in young adulthood) were incorporated in our model in order to examine the pathways to maladaptive behaviors in adulthood controlling for gender, ethnicity, and educational level in adulthood.

We hypothesize that: (1) an adverse family environment in adolescence will be associated with an externalizing personality in adolescence, which in turn, will be associated with self marijuana use in emerging adulthood. Self marijuana use will be related to a partner's marijuana use, which in turn, will be associated with maladaptive behaviors later in adulthood; (2) an adverse family environment in adolescence will be directly associated with self marijuana use in emerging adulthood, which in turn, will be associated with difficulties in the relationship with his/her partner in young adulthood. This will ultimately be associated with maladaptive behaviors in adulthood; (3) an adverse family environment in adolescence will also be associated with adverse relationships with one's partner in young adulthood, which in turn, will be associated with maladaptive behaviors later in adulthood; and (4) the pathways among the dimensions described above will be maintained after controlling for gender, ethnicity, and educational level.

Method

Participants

There were 674 participants (52 % African Americans, 48 % Puerto Ricans) who completed the T5 questionnaire. Among the 674 participants, 60 % (n = 405) were females. Data on the participants were first collected in 1990 (time 1; T1, N = 1332) when they were students attending schools in the East Harlem area of New York City. At T1, the questionnaires were administered in classrooms under the supervision of the study research staff with no teachers present. The mean age of participants at T1 was 14.2 years [standard deviation (SD) = 1.3 years]. At time 2 (T2; 1994–1996; N = 1190), the National Opinion Research Center located and interviewed the participants in person or by phone. The mean age of the participants at this wave was 19.2 years (SD = 1.5 years). At time 3 (T3; 2000–2001; N = 662), the Survey Research Center of the University of Michigan collected the data. The mean age of the participants at T3 was 24.4 years (SD = 1.3 years). At Time 4 (T4) and Time 5 (T5), the data were collected by our research group. At T4 (2004–2007; N = 848), the mean age was 29.2 years (SD = 1.3 years). At T5 (2011–2013; N = 674), the average age of the participants was 35.9 years (SD = 1.4 years).

Procedure

The Institutional Review Boards (IRB) of the Mount Sinai School of Medicine and of New York Medical College approved the study's procedures for data collections in the earlier waves of the study, and the New York University School of Medicine's IRB approved the study for T4 and T5. A Certificate of Confidentiality was obtained from the National Institute on Drug Abuse for T1–T3 and T5, and from the National Cancer Institute at T4. At

T1 and T2, passive consent procedures were followed with the parents of the minors. At each time wave, we obtained informed consent from each participant.

We compared the demographic variables for the 674 adults who participated at both T2 and T5 with the 658 who participated at T2 but not at T5. There were no significant differences on the mean scores of low family church attendance, having a family member in jail, risk-taking behavior, rebellion, delinquency, and the proportion of African Americans. However, the percentage of males participating at T2 only (52 %) was significantly higher than that at both T2 and T5 (40 %; $\chi^2_{(1)}=16.53, p < .001$).

Measures

The demographic variables at T5 are: (a) *Gender*—(female = 1, male = 2), (b) *Ethnicity*—(African American = 1, Puerto Rican = 2), and (c) *Educational level*—(11th grade or below = 0, 12th grade or GED = 1, business or technical school = 2, college freshman = 3, college sophomore or associate's degree = 4, college junior = 5, college senior or bachelor's degree = 6, postgraduate business, law, medical, masters, or doctoral program = 7).

The adverse family environment domain at T2 included two scales: (a) *Family church attendance* (Original) was a three item scale, e.g. "How often do you, your mother, and/ or your father attend religious services?" with a 4-point Likert scale that ranged from "never" to "once a week or more." Reverse coding was used in the analysis. (b) *Family police record* (Hawkins and Beauvais 1985) was a four item scale, e.g., "Were your biological mother, father, siblings, and/or spouse/partner ever arrested or spent time in jail?" with answer options of yes or no. (c) *Father problems with marijuana use* was a single item "Has your biological father had a problem with the use of marijuana?" with answer options of yes or no. (d) *Mother problems with marijuana use* was a single item "Has your biological mother had a problem with the use of marijuana?" with answer options of yes or no.

The externalizing personality domain at T2 included three scales: (a) *Risk taking* (Jackson 1984) was a six item scale, e.g. "Do you like to live dangerously?" with a 4-point Likert scale that ranged from "completely false" to "completely true." The alpha was 0.74. (b) *Rebellion* (Smith and Fogg 1979), was a three item scale, e.g. "Do you enjoy doing things you should not, just for the fun of it?" The alpha was 0.67. (c) *Delinquent behavior* (Huizinga et al. 1989) was a two item scale, e.g., "During the last few years, how often have you been arrested or convicted for drug possession (or use)?" with a 4-point Likert scale that ranged from "never" to "five or more times." The inter-item correlation was 0.60 ($p < .0001$).

For *self marijuana use* at T3, the participants were asked how often they used marijuana in the past 5 years. For *partner marijuana use* at T4, participants reported how often their partner used marijuana in the past 5 years. For both questions, the answer options were: never (0), a few times a year or less (1), about once a month (2), several times a month (3), and once a week or more (4).

The adverse relationship with partner domain at T4 included two scales: (a) *Marital harmony* (Spanier 1976) was a seven item scale, e.g., "How often do you and your partner

have fun together?” with 4-point Likert scale that ranged from “always” to “never.” The alpha was 0.91. (b) *Satisfaction with partner* (Spanier 1976) was a four item scale, e.g., “How often do you talk about breaking up with, separating from, or divorcing your partner?” with a 6-point Likert scale that ranged from “never” to “all the time.” The alpha was 0.77.

The maladaptive behaviors domain at T5 included: (a) *Self marijuana use* with the same question and answer options that we used at T3 (See above). (b) *Antisocial Personality Disorder (ASPD)* was assessed using an adaptation of the UM-CIDI (Kessler et al. 1994) and DSM-V (American Psychiatric Association 2013) Antisocial Personality Disorder measure. The participants were asked a series of six questions: *Since you were 15 years old, have you...* (1) Repeatedly behaved in a way that others would consider irresponsible, like failing to pay for things you owed or deliberately not working to support yourself? (2) Done things that are illegal even if you did not get caught (for example, destroying property, shoplifting, stealing, selling drugs, or committing a felony)? (3) Been in physical fights repeatedly (including physical fights with your spouse or children)? (4) Often lied or “conned” other people to get money or pleasure, or lied just for fun? (5) Exposed others to danger without caring? (6) Felt no guilt after hurting, mistreating, lying to, or stealing from others, or after damaging property?

A participant received a score of one on the measure of adult ASPD if s/he answered ‘yes’ to three or more of the six questions and these three items occurred within the last 5 years. Table 1 shows the distribution of the six questions. If these criteria were not met, the participant received a score of zero. The internal reliability of the Antisocial Personality Disorder questions was satisfactory ($\alpha = 0.82$).

Data Analyses

We used Mplus (Version 6) to perform structural equation modeling (SEM) (Muthén and Muthén 2010). Following Newcomb and Bentler (Newcomb and Bentler 1988), we partialled out the effects of gender, ethnicity, and educational level at T5. The Mplus Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were used to assess the fit of the model. For the CFI, values between 0.90 and 1.0 indicate an adequate fit (Muthén and Muthén 2010). For the RMSEA, values below 0.10 indicate an adequate fit (Kelloway 1998). For SRMR, values below 0.05 indicate an adequate fit (Byrne 1998; Diamantopoulos and Siguaw 2000).

We calculated the standardized total effects and total indirect effects by using the Model Indirect command in Mplus (Baron and Kenny 1986; MacKinnon et al. 2002). The standardized total effect equals the sum of the direct and the indirect effects of each earlier latent variable (as estimated in the analysis) on maladaptive behaviors at T5 (see Fig. 1).

Missing Data

Of the 674 participants who participated at T5, 69.5 % participated in all five time waves, 26.6 % participated in four waves, 3.9 % participated in three waves, and none participated in two or fewer waves of data collection. The structural equation algorithm in Mplus dealt

with missing data by using the maximum likelihood estimation of missing values (Muthén and Muthén 2010).

Results

The prevalence of ASPD at T5 was 4.3 % ($n = 29$). We tested the measurement model, as well as the structural model, controlling for the participant's gender, ethnicity, and educational level at T5. All factor loadings were significant ($0.21 < \text{standardized coefficient } \beta < 0.76, p < .001$). The CFI was 0.91, the RMSEA was 0.05, and the SRMR was 0.05, which indicated an adequate model fit. The standardized coefficients (β) and z -statistics in parenthesis for the sample are presented in Fig. 1 for the structural model.

An adverse family environment in late adolescence was related to more externalizing personality in late adolescence ($\beta = 0.45, p < .001$), which in turn, was related to greater self marijuana use in emerging adulthood ($\beta = 0.57, p < .001$). This in turn was positively associated with partner marijuana use in young adulthood ($\beta = 0.16, p < .001$), which in turn, was ultimately related to maladaptive behaviors in the adulthood ($\beta = 0.14, p < .05$). An adverse family environment in late adolescence was also related to greater self marijuana use in emerging adulthood ($\beta = 0.17, p < .01$), which in turn, was associated with adverse relationship with one's partner in young adulthood ($\beta = 0.53, p < .001$). This was related to maladaptive behaviors in adulthood ($\beta = 0.52, p < .001$).

Table 2 presents the results of the total effect analyses. As shown in Table 2, each of the latent variables had a significant total effect ($p < .05$). Among them, adverse relationships with one's partner in young adulthood had the greatest total effect on maladaptive behaviors in adulthood ($\beta = 0.52, p < .001$). Self marijuana use in emerging adulthood had the next greatest total effect on maladaptive behaviors in adulthood ($\beta = 0.30, p < .001$).

Discussion

We investigated the interrelationships among an adverse family environment, externalizing personality attributes during late adolescence, self marijuana use in emerging adulthood, adverse relationship with partner, partner marijuana use in young adulthood, and maladaptive behaviors in adulthood. Three possible confounding factors (i.e., gender, ethnicity, educational level at T5) for mal-adaptive behaviors were controlled. A structural equation model supported the hypothesized pathways with one exception. A direct pathway from an adverse family environment in late adolescence to adverse relationships with one's partner in young adulthood was not statistically significant. The association between an adverse family environment in late adolescence and adverse relationship with one's partner in young adulthood was mediated by externalizing personality attributes in late adolescence and self marijuana use in emerging adulthood.

Our findings indicating the pathways from an adverse family environment in late adolescence to externalizing personality attributes in late adolescence and to self marijuana use in emerging adulthood are supported by Social Learning Theory. For example, if an offspring observes parents who have problems with drug use (e.g., substance abuse/dependence) or exhibit some antisocial behaviors (e.g., incarceration), then the offspring is

likely to replicate his/her parents' maladaptive behaviors. This is also consistent with the findings from an 18 year longitudinal study which suggested that parents' antisocial behaviors (e.g., aggression) are transmitted to their children (Brook et al. 2012).

The pathways from self marijuana use in emerging adulthood to an adverse relationship with one's partner in young adulthood and to partner marijuana use in young adulthood are supported by Family Interactional Theory (FIT) (Brook et al. 1990), Selection Theory (Labouvie 1996), and Socialization Theory (Oetting and Donnermeyer 1998). According to FIT, marijuana use may lead to difficulty in interpersonal functioning including an adverse relationship with one's partner (Brook et al. 2011). Selection Theory proposes that individuals self-select into social groups that are similar to themselves. According to this model, an individual chooses peers who share similar substance use beliefs, attitudes, and histories. Consequently, marijuana users are more likely to select a partner who also uses marijuana. In accord with Socialization Theory, normative and deviant behaviors including drug use are formed as a result of interactions with significant others such as family and/or peers (Andrews et al. 2002; Pandina et al. 2010). Indeed, a longitudinal study among men (ages 23–32 years) found that partner marijuana use significantly predicted the participant's marijuana use (Washburn et al. 2014).

The pathway from adverse relationships with a partner in young adulthood to maladaptive behaviors in adulthood can also be explained in part by FIT. As posited by FIT, supportive inter-relationships among family members are a major protective factor insulating individuals from engaging in maladaptive behaviors. Our finding is also in accord with the results from a cross-sectional study reporting that overall relationship sentiment, serious conflicts with one's spouse, and the quality of interactions were related to symptoms of personality disorders which are associated with deficits in relating to other people (South 2014). In addition, a number of longitudinal studies have found that romantic relationships with a partner were associated with less maladaptive behaviors (Brook et al. 2011; Gudonis-Miller et al. 2012; Rhule-Louie and McMahon 2007).

Furthermore, adverse relationships with a partner in young adulthood had the greatest total effect on maladaptive behavior in adulthood. More specifically, although not hypothesized, adverse relationship with a partner contributed more than self marijuana use to maladaptive behaviors which include ASPD and marijuana use. Maintaining positive relationships with a partner at an earlier time point could help to avoid the development and continuation of maladaptive behaviors at a later time.

Limitations

This study has some limitations. First, the measures used in this study were based on self-report and may include some respondent bias (e.g., under-reporting of marijuana use). However, self-reported data has been used in a number of survey studies and has been found to have adequate reliability and validity (Harrison et al. 2007; Ledgerwood et al. 2008). Second, the findings of this study are based on African American and Puerto Rican adults living in an urban area. This may affect the generalizability of the findings to other populations. However, this is one of the few longitudinal studies of African Americans and

Puerto Ricans designed to include data from adolescence to adulthood. Third, other components of maladaptive behavior including other types of substances and delinquency were not included in this study. Fourth, our sample included more females than males.

Despite these limitations, our findings contribute to the literature in three ways. First, the study covers four significant stages of development from late adolescence (mean age 19) to adulthood (mean age 36). Second, to our knowledge, this is the first longitudinal study of the effects of an adverse family environment in late adolescence as related to mal-adaptive behaviors in adulthood assessed in a sample of African Americans and Puerto Ricans living in an urban area. Third, our findings indicated that externalizing personality (mean age 19) and self marijuana use (mean age 24) served as partial mediators on the pathway from adverse family environment in late adolescence to adverse relationship with a partner in young adulthood (mean age 29).

Our findings illustrate the significance of an adverse family environment at age 19 and maladaptive behaviors at age 36 via a number of domains (i.e., externalizing personality at age 19, self marijuana use at age 24, adverse relationship with a partner at age 29, and partner marijuana use at age 29). As a result, this study has implications for intervention. Principles of effective family-focused interventions (Kumpfer and Alvarado 2003) suggested that intervention programs for dysfunctional families should, if possible, include the entire family.

Our finding that externalizing personality attributes in late adolescence are related to maladaptive behaviors in adulthood through self marijuana use in emerging adulthood, adverse relationship with a partner, and partner marijuana use in young adulthood emphasizes the contribution of the adolescents' externalizing personality (e.g. delinquent behaviors) to maladaptive behaviors in adulthood. This finding suggests that interventions may have positive effects by working with the adolescents on pre-existing externalizing problems in addition to focusing on family processes.

From a prevention science perspective, policy makers should consider some practical social services for helping adolescents who have been exposed to adverse family environments. Providing adolescents whose parents are in jail or are substance abusers with non-parental prosocial adults as role models may protect individuals in late adolescence from imitating their parents' maladaptive behaviors. This might ultimately reduce maladaptive behaviors in adulthood.

References

- Adamczyk A. Understanding delinquency with friendship group religious context. *Social Science Quarterly*. 2012; 93(2):482–505.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. 5. Arlington, VA: American Psychiatric Publishing; 2013.
- Andrews JA, Tildesley E, Hops H, Li F. The influence of peers on young adult substance use. *Health Psychology*. 2002; 21(4):349–357. [PubMed: 12090677]
- Bandura, A. *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall; 1977.

- Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*. 1986; 51(6):1173–1182. [PubMed: 3806354]
- Becker SJ, Nargiso JE, Wolff JC, Uhl KM, Simon VA, Spirito A, et al. Temporal relationship between substance use and delinquent behavior among young psychiatrically hospitalized adolescents. *Journal of Substance Abuse Treatment*. 2012; 43(2):251–259. [PubMed: 22197300]
- Brook JS, Brook DW, Gordon AS, Whiteman M, Cohen P. The psychological etiology of adolescent drug use: A family interactional approach. *Genetic, Social, and General Psychology Monographs*. 1990; 116:111–267.
- Brook JS, Lee JY, Brown EN, Finch SJ, Brook DW. Developmental trajectories of marijuana use from adolescence to adulthood: Personality and social role outcomes. *Psychological Reports*. 2011a; 108(2):339–357. [PubMed: 21675549]
- Brook JS, Lee JY, Finch SJ, Brown EN. The association of externalizing behavior and parent–child relationships: An intergenerational study. *Journal of Child and Family Studies*. 2012; 21(3):418–427. [PubMed: 23667304]
- Brook JS, Lee JY, Finch SJ, Koppel J, Brook DW. Psychosocial factors related to cannabis use disorders. *Substance Abuse*. 2011b; 32(4):242–251. [PubMed: 22014255]
- Byrne, BM. *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates; 1998.
- Chamrathirong A, Miller BA, Byrnes HF, Rhucharoenpornpanich O, Cupp PK, Rosati MJ, et al. Intergenerational transmission of religious beliefs and practices and the reduction of adolescent delinquency in urban Thailand. *Journal of Adolescence*. 2013; 36(1):79–89. [PubMed: 23218782]
- Chen KW, Banducci AN, Guller L, Macatee RJ, Lavelle A, Daughters SB, et al. An examination of psychiatric comorbidities as a function of gender and substance type within an inpatient substance use treatment program. *Drug and Alcohol Dependence*. 2011; 118(2):92–99. [PubMed: 21514751]
- Compton WM, Conway KP, Stinson FS, Colliver JD, Grant BF. Prevalence, correlates, and comorbidity of DSM-IV antisocial personality syndromes and alcohol and specific drug use disorders in the United States: Results from the national epidemiologic survey on alcohol and related conditions. *Journal of Clinical Psychiatry*. 2005; 66(6):677–685. [PubMed: 15960559]
- David P, Stafford L. A relational approach to religion and spirituality in marriage: The role of couples' religious communication in marital satisfaction. *Journal of Family Issues*. 2013; 34(10):1177–1192. [PubMed: 2513485922]
- Diamantopoulos, A.; Siguaw, JA. *Introducing LISREL: A guide for the uninitiated*. Thousand Oaks, CA: Sage Publications; 2000.
- Eaton NR, Keyes KM, Krueger RF, Balsis S, Skodol AE, Markon KE, et al. An invariant dimensional liability model of gender differences in mental disorder prevalence: Evidence from a national sample. *Journal of Abnormal Psychology*. 2012; 121(1):282–288. [PubMed: 21842958]
- Eddy, JM.; Reid, JB. The antisocial behavior of the adolescent children of incarcerated parents: A developmental perspective. Paper presented at the From Prison to Home Conference; Washington, DC. 2002.
- Fairchild G, Goozen SH, Calder AJ, Goodyer IM. Research review: Evaluating and reformulating the developmental taxonomic theory of antisocial behaviour. *Journal of Child Psychology and Psychiatry*. 2013; 54(9):924–940. [PubMed: 23826820]
- Geller A, Garfinkel I, Cooper CE, Mincy RB. Parental incarceration and child well-being: Implications for urban families. *Social Science Quarterly*. 2009; 90(5):1186–1202. [PubMed: 20228880]
- Greenberg MT, Lippold MA. Promoting healthy outcomes among youth with multiple risks: Innovative approaches. *Annual Review of Public Health*. 2013; 34:253–270.
- Gudonis-Miller LC, Lewis L, Tong Y, Tu W, Aalsma MC. Adolescent romantic couples influence on substance use in young adulthood. *Journal of Adolescence*. 2012; 35(3):638–647. [PubMed: 21907401]
- Harrison, L.; Martin, S.; Enev, T.; Harrington, D. *Comparing drug testing and self-report of drug use among youths and young adults in the general population*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2007.

- Hawkins, R.; Beauvais, C. Evaluation of group therapy with abusive men: The police record. Paper presented at the meeting of the American Psychological Association; Los Angeles, CA. 1985.
- Hirschi, T. Causes of delinquency. Somerset, KY: Transaction Publishers; 2002.
- Hoffmann JP. Religiousness, social networks, moral schemas, and marijuana use: A dynamic dual-process model of culture and behavior. *Social Forces*. 2014;109(3):1053-1073.
- Huizinga DH, Menard S, Elliott DS. Delinquency and drug use: Temporal and developmental patterns. *Justice Quarterly*. 1989; 6(3):419-455.
- Jackson, DN. Personality research form manual. Port Huron, MI: Research Psychologists Press; 1984.
- Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE.; Miech, RA. Monitoring the future national survey results on drug use, 1975-2013: Volume II, college students and adults ages 19-55. Ann Arbor: Institute for Social Research, The University of Michigan; 2014. p. 424
- Kelloway, EK. Using LISREL for structural equation modeling: A researcher's guide. Thousand Oaks, CA: Sage Publications; 1998.
- Kennedy AC, Bybee D, Greeson MR. Examining cumulative victimization, community violence exposure, and stigma as contributors to PTSD symptoms among high-risk young women. *American Journal of Orthopsychiatry*. 2014; 84(3):284-294. [PubMed: 24827023]
- Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the national comorbidity survey. *Archives of General Psychiatry*. 1994; 51(1):8-19. [PubMed: 8279933]
- Kumpfer KL, Alvarado R. Family-strengthening approaches for the prevention of youth problem behaviors. *American Psychologist*. 2003; 58(6-7):457-465. [PubMed: 12971192]
- Labouvie E. Maturing out of substance use: Selection and self-correction. *Journal of Drug Issues*. 1996; 26(2):457-476.
- Ledgerwood DM, Goldberger BA, Risk NK, Lewis CE, Price RK. Comparison between self-report and hair analysis of illicit drug use in a community sample of middle-aged men. *Addictive Behaviors*. 2008; 33(9):1131-1139. [PubMed: 18547737]
- Liebrechts N, van der Pol P, van Laar M, de Graaf R, van den Brink W, Korf DJ. The role of parents, peers and partners in cannabis use and dependence trajectories among young adult frequent users. *Contemporary Drug Problems*. 2013; 40(4):531-568.
- MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*. 2002; 7(1):83-104. [PubMed: 11928892]
- Mueser KT, Gottlieb JD, Cather C, Glynn SM, Zarate R, Smith MF, et al. Antisocial personality disorder in people with co-occurring severe mental illness and substance use disorders: Clinical, functional, and family relationship correlates. *Psychosis*. 2012; 4(1):52-62. [PubMed: 22389652]
- Murray J, Farrington DP. Parental imprisonment: Long-lasting effects on boys' internalizing problems through the life course. *Development and Psychopathology*. 2008; 20(01):273-290. [PubMed: 18211738]
- Muthén, L.; Muthén, B. Mplus user's guide. 6. Los Angeles, CA: Muthén & Muthén; 2010.
- Newcomb MD, Bentler PM. Impact of adolescent drug use and social support on problems of young adults: A longitudinal study. *Journal of Abnormal Psychology*. 1988; 97(1):64-75. [PubMed: 3351114]
- Oetting ER, Donnermeyer JF. Primary socialization theory: The etiology of drug use and deviance. I. *Substance Use & Misuse*. 1998; 33(4):995-1026. [PubMed: 9548633]
- Pandina, R.; Johnson, V.; White, H. Peer influences on substance use during adolescence and emerging adulthood. Washington, DC: American Psychological Association; 2010.
- Reboussin BA, Ialongo NS, Green KM. Influences of behavior and academic problems at school entry on marijuana use transitions during adolescence in an African-American sample. *Addictive Behaviors*. 2015; 41:51-57. [PubMed: 25305658]
- Rhule-Louie DM, McMahon RJ. Problem behavior and romantic relationships: Assortative mating, behavior contagion, and desistance. *Clinical Child and Family Psychology Review*. 2007; 10(1): 53-100. [PubMed: 17318381]

- Samuels J, Eaton WW, Bienvenu OJ, Brown CH, Costa PT, Nestadt G. Prevalence and correlates of personality disorders in a community sample. *The British Journal of Psychiatry*. 2002; 180(6): 536–542. [PubMed: 12042233]
- Smith GM, Fogg CP. Psychological antecedents of teenage drug use. *Research in Community and Mental Health*. 1979; 1:87–102.
- South SC. Personality pathology and daily aspects of marital functioning. *Personality Disorders: Theory, Research, and Treatment*. 2014; 5(2):195–203.
- Spanier GB. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*. 1976; 38(1):15–28.
- VandenBos, GR. *APA Dictionary of Psychology*. Washington, DC: American Psychological Association; 2007.
- Volkow ND, Baler RD, Compton WM, Weiss SR. Adverse health effects of marijuana use. *New England Journal of Medicine*. 2014; 370(23):2219–2227. [PubMed: 24897085]
- Washburn IJ, Capaldi DM, Kim HK, Feingold A. Alcohol and marijuana use in early adulthood for at-risk men: Time-varying associations with peer and partner substance use. *Drug and Alcohol Dependence*. 2014; 140:112–117. [PubMed: 24793369]
- Yang M, Wong SC, Coid JW. Violence, mental health and violence risk factors among women in the general population: An0020 epidemiology study based on two national household surveys in the UK. *BMC Public Health*. 2013; 13:1020–1030. [PubMed: 24165544]

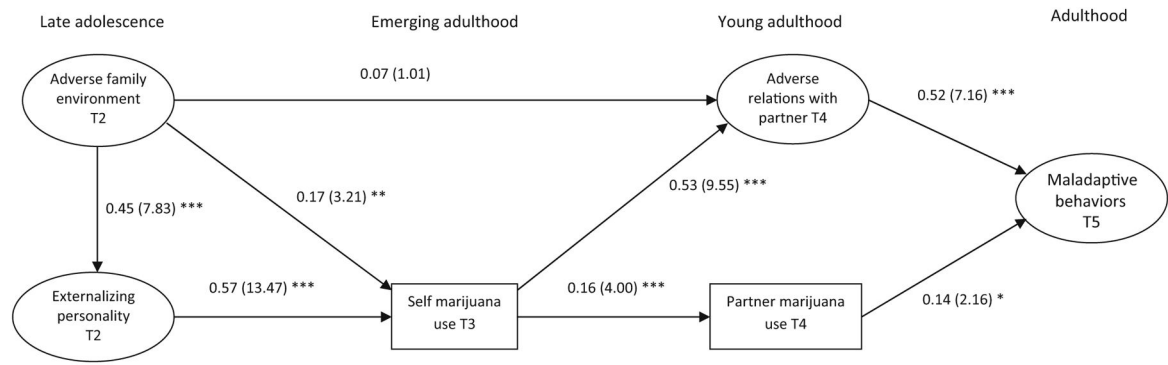


Fig. 1. Pathways from family environment at late adolescence to maladaptive behaviors in adulthood. * $p < .05$; ** $p < .01$; *** $p < .001$. CFI = 0.91; RMSEA = 0.05; SRMR = 0.05. Mean ages at T2 = 19, at T3 = 24, at T4 = 29, and at T5 = 36. Gender, ethnicity, and educational level at T5 were statistically controlled. Adverse family environment at T2 includes family church attendance, family police record, father problem with marijuana use, and mother problem with marijuana use. Externalizing personality at T2 includes risk taking, rebellion, and delinquent behavior. Adverse relations with partner at T4 includes marital harmony and satisfaction with partner. Maladaptive behaviors at T5 includes ASPD and marijuana use

Table 1

Percentages reporting behaviors in the antisocial personality disorder measure

Since you were 15 years old, have you...	Since 15 years old	Occurrence in past 5 years
1. Repeatedly behaved in a way that others would consider irresponsible, like failing to pay for things you owed or deliberately not working to support yourself?	13.4 % (n = 90)	2.8 % (n = 19)
2. Done things that are illegal even if you did not get caught (for example, destroying property, shoplifting, stealing, selling drugs, or committing a felony)?	25.4 % (n = 171)	3.9 % (n = 26)
3. Been in physical fights repeatedly (including physical fights with your spouse or children)?	16.5 % (n = 111)	2.8 % (n = 19)
4. Often lied or “conned” other people to get money or pleasure, or lied just for fun?	15.3 % (n = 103)	3.7 % (n = 25)
5. Exposed others to danger without caring?	6.4 % (n = 43)	2.5 % (n = 17)
6. Felt no guilt after hurting, mistreating, lying to, or stealing from others, or after damaging property?	10.4 % (n = 70)	3.1 % (n = 21)

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2

Standardized total effects of each domain on maladaptive behaviors (z-statistics in parentheses)

	Total effects on maladaptive behaviors (T5)
Adverse relations with partner (T4)	0.52 (7.16) ^{***}
Partner marijuana use (T4)	0.14 (2.16) [*]
Self marijuana use (T3)	0.30 (5.95) ^{***}
Externalizing personality (T2)	0.17 (5.35) ^{***}
Adverse family environment (T2)	0.16 (3.17) ^{***}

*
 $p < .05$;***
 $p < .001$

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript